

Claims

1. A method to identify an IRES element which method comprises providing a bicistronic expression system which comprises, in operable linkage with a promoter, first nucleotide sequence encoding a first reporter protein and a cap sequence for mediation of translation of said first reporter protein and a second nucleotide sequence encoding a second reporter protein wherein a candidate IRES element is upstream of said second nucleotide sequence

culturing said expression system under conditions wherein said first nucleotide sequence is transcribed and translated into protein; and

determining the presence or amount of production of said second reporter protein, wherein the presence or amount of said second reporter protein indicates that the candidate IRES element performs as an IRES element.

2. The method of claim 1, wherein said first and second reporter proteins are fluorescent proteins having distinguishable fluorescence.

3. The method of claim 2, wherein said determining is through FACS analysis.

4. The method of claim 1, wherein the candidate IRES element is a randomized nucleotide sequence of <100 nucleotides.

5. The method of claim 1, wherein said culturing is *in vitro*.

6. The method of claim 1, wherein said culturing is intracellular.

7. The method of claim 6, wherein the expression system is made intracellular by protoplast fusion.

8. A method to control viral infection in a cell which method comprises contacting said cell with an IRES element identified by the method of claim 1, under conditions wherein said IRES element inhibits production of viral proteins.

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9. A method to identify a *trans*-acting translation factor which method comprises assessing the ability of a candidate factor to interact with an IRES element identified by the method of claim 1.

10. The method of claim 9, wherein said candidate is included in a cellular extract.

11. A method to regulate cellular metabolism which method comprises contacting a cell with an IRES element identified by the method of claim 1 under conditions wherein said IRES element is exposed to *trans*-acting factors necessary for said intracellular metabolism.

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